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# information on courses & workshops

1979-80

training &  
certification



Ontario

Ministry  
of the  
Environment

The Honourable  
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Minister

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MINISTRY OF THE ENVIRONMENT

TECHNICAL TRAINING PROGRAM

1979-1980

Preface

The responsibilities of the Training and Certification section, Pollution Control Branch, Ontario Ministry of the Environment, include the development and conduct of training and certification programs for personnel engaged in the protection and upgrading of the natural environment. By working in close co-operation with professional, industrial and government organizations, programs are designed to meet the needs of Ministry and non-Ministry staff. As additional requirements are identified, new programs will be developed.

If recipients of this bulletin know of others in their localities who might be interested in the Ministry training program please encourage them to request a copy of the bulletin from the

Publication Centre  
Ministry of Government Services  
880 Bay St.  
Toronto, Ontario M7A 1N8

Information not included in the brochure may be obtained from:

Registration Secretary  
Training and Certification Section  
Pollution Control Branch  
135 St. Clair Avenue West  
Toronto, Ontario M4V 1P5

#### TRAINING PHILOSOPHY

1. In general, programs employ the Behavioural Objective Approach to Training (BOAT). A training manual, prepared for each course or workshop, as a reference text, provides information on the topics and lists objectives which tell the trainee what he must know and do to successfully complete the course. At the same time it reminds the instructor what he must teach, describe or demonstrate so that the performance of the trainee meets the required standards. To verify successful completion, both practical (hands-on) and written tests are administered to the trainees.
2. Instructors are obtained from many sources and have usually been involved in developing material for the courses and workshops. As part of their normal work they are usually also responsible for providing advice, guidance and practical assistance to the operational staff, so they understand the day-to-day problems faced in the field. Based on this knowledge and background, the instructor can deal with any relevant questions raised during the course or workshop. Furthermore, he is identified to the trainee as a point of contact for advice on problems which might arise.

#### SCOPE OF PROGRAM

3. Courses and workshops are offered annually, with most being scheduled between September and May. A course consists of lecture and discussion periods interspersed with audio-visual presentations and other demonstrations. A workshop is a course which includes substantial "hands-on" participation, during which the trainee receives practical training and errors are corrected as they occur.
4. Training programs offered by this Ministry and described in the attached Appendices are listed below:

Appendix 1. Monitoring Water/Wastewater Treatment Operations

2. Basic Sewage Treatment Operation Course
  3. Activated Sludge Workshop
  4. Primary Treatment and Digestion Workshop
  5. Basic Water Treatment Operation Course
  6. Surface Water Treatment Workshop
  7. Basic Gas Chlorination Workshop
  8. Pump Operation Workshop
  9. Preventive Maintenance Workshop
  10. Digester Gas System Maintenance Workshop
  11. Industrial Abatement-Air Management
  12. Visible Emissions Identification  
Certificate Course
  13. Acoustic Technology Certificate Course
  14. Acoustic Technology in Land Use Planning
  15. Sewer and Watermain Design Course
  16. MEA/MOE Inspectors Course No. 1
  17. MEA/MOE Inspectors Course No. 2
  18. OP/Maintenance of Water Distribution Systems
  19. OP/Maintenance of Wastewater Collection Systems
5. A course calendar is at Appendix 20 and the program schedule is at Appendix 21.
6. Prerequisites
- (a) Prerequisites are specified on some courses. Employers must ensure that course candidates meet these requirements. If an application is received for a candidate lacking the course prerequisites, it will not be accepted.
  - (b) Certain advance courses require the Ministry Basic Water or Sewage Course or equivalent as a prerequisite. Equivalents to the Ministry Basic Courses include the courses previously offered by the OWRC.
  - (c) Certain courses, because of prerequisites and/or course design, are restricted to specific groups. Courses annotated "MOE only" are available to Ministry staff other than plant operators;

"Operators only" restricts these courses to water and wastewater treatment plant employers, either Ministry or non-Ministry. If no restriction is shown, anyone with the proper prerequisites may make application. See Appendix 21.

7. Course Capacity

The capacity of each course, workshop and seminar is shown on Appendix 21 Program Schedule. If a course is over-subscribed, selection of candidates will be based on date of receipt of application.

APPLICATION PROCEDURES

8. An application must be submitted by letter:

- (a) For a Ministry employee, by a Regional Director, a Regional Manager, a Branch Director or Supervisor.
- (b) For a non-Ministry employee, by the individual's employer.

9. The following information must be included:

- (a) Course and date. An acceptable alternate, if available, should be shown.
- (b) Full name of applicant and home address.
- (c) Job title, address of employment and department or office.

10. Registration Fee

The required registration fee for each course is stated in the appropriate appendix. Ministry employees may pay the fee on registration. Registration fees must accompany the applications of non-Ministry applicants, and

- (a) For all courses except MEA/MOE co-sponsored courses (Appendices 15, 16 and 17), the cheque or money order must be made payable to Training and Certification Section.
- (b) For MEA/MOE co-sponsored courses (Appendices 15, 16 and 17), the cheque or money order must be made payable to Municipal Engineers Association of Ontario.

11. An application (registration fee, if applicable) should be forwarded to the Registration Secretary at the address shown in the Preface as early as possible but no later than the date shown below:

September Courses	-	July 15
October Courses	-	August 15
November Courses	-	September 15
December Courses	-	October 15
January Courses	-	November 15
February Courses	-	December 15
March Courses	-	January 15
April Courses	-	February 15
May Courses	-	March 15

12. If a course is over-subscribed, selection of candidates will be based on receipt of application. As soon as possible after its receipt, the individual's employer will be notified of the acceptance or rejection of the application. If the course of first choice is oversubscribed and an alternate has been shown on the application, the nominee will be listed for the alternative course (if space is available), subject to confirmation by the employer.

13. Pre-Course Study

Prior to a course, an information package will be forwarded to each applicant. This will include general course information, a sketch map showing course location and, in most cases, reference material for pre-course study.

14. Pre-course study is required for many of the courses. It is essential the employers encourage applicants to review the material provided for that purpose. For certain courses, the applicant will be required to submit solutions to problems forwarded with study material.

15. Course Completion

The appropriate appendix shows the minimum average to be attained for successful completion of the course. A candidate's results will be forwarded to his employer, who is responsible for informing the individual.

16. Training Facilities

- (a) These are located at the Ontario Experimental and Training Facility, (OEF) Brampton and the Ministry Laboratory, Resources Road, near the intersection of Islington Avenue and Highway 401. The sketch map at Appendix 22 shows these locations.
- (b) Training conducted outside of Toronto will be held in suitable accommodation obtained specifically for the session.

17. Transportation and Accommodation

- (a) These arrangements, including reservations, are the responsibility of the trainee. The sketch map indicates the motel/hotel area which is within reasonable proximity to the training facilities. A list of hotels with approximate room costs is at Appendix 23.
- (b) Employers must ensure that trainees on arrival at the course location are in possession of sufficient funds to meet anticipated expenses, including the registration fee if not previously paid.



6.

19. Training manuals published by the Ministry of Environment are available for purchase from:

Publication Centre  
Ministry of Government Services  
880 Bay St., (5th Floor)  
Toronto, Ontario. M7A 1N8

These include

Basic Sewage Treatment Operation  
Activated Sludge Process  
Primary Treatment and Sludge Digestion  
Basic Water Treatment Operation  
Surface Water Treatment Operation  
Basic Gas Chlorination  
Pump Operation  
Preventive Maintenance  
Acoustics Technology I, II and III  
Acoustics Technology in Land Use Planning, Vols. I, II and III

20. Manuals published by The Ontario Municipal Engineers Association include:

Municipal Works Design Manual  
Sewer and Watermain Construction Inspectors  
Course, Manuals I and II

These are available by writing to:

Mr. Jim Near  
Metro Toronto, Works Department  
505 Richmond St. West (2nd Floor)  
Toronto, Ontario  
M5B 1Y3

COURSE DESCRIPTIONMONITORING WATER/WASTEWATER TREATMENT OPERATIONS

## PURPOSE:

The seminar, Monitoring Water and Wastewater Treatment Operations, is designed for environmental officers and technicians who have inspection and advisory functions related to municipal and private utility operations. The program emphasizes analysis of process problems, process control and troubleshooting.

## SCOPE:

The following topics will be dealt with:

- A. Inspection procedures for water and wastewater treatment facilities
- B. Ministry policy and guidelines
- C. Evaluation of flow metering data
- D. Process control and process control tests
- E. Problem solving
- F. Report writing

## PRE-COURSE FAMILIARIZATION:

The trainee must review the Ministry manuals on basic water and wastewater treatment operations and reference notes on monitoring these facilities.

## PREREQUISITES:

An applicant must be employed as an environmental officer or technician and have a good knowledge of water/wastewater treatment processes.

## REGISTRATION FEE:

\$25.00 payable to "Training and Certification Section".

COURSE DESCRIPTIONBASIC SEWAGE TREATMENT OPERATION COURSE

## PURPOSE:

The Basic Sewage Treatment Operation Course is designed primarily for operators in training and to increase on-the-job efficiency of wastewater treatment plant operators. The program stresses "the need to know" of all processes associated with wastewater treatment. This course is a prerequisite to the Activated Sludge Workshop, the Primary Treatment and Digestion Workshop.

## SCOPE:

The course covers the following topics:

- A. SEWAGE CHARACTERISTICS
- B. BACTERIOLOGY OF SEWAGE
- C. PRIMARY TREATMENT
- D. THE ACTIVATED SLUDGE PROCESS
- E. DIGESTION OF SLUDGE
- F. SLUDGE HANDLING
- G. INDUSTRIAL WASTE
- H. CHLORINATION OF SEWAGE
- I. BASIC LABORATORY TESTS
- J. SAMPLING AND RECORD KEEPING
- K. SAFETY

## PRE-COURSE

## FAMILIARIZATION:

Pre-course study material will be provided. When preparing to attend this course, an applicant must:

- (a) Review the Ministry manual, Basic Sewage Treatment Operation;
- (b) Complete the exercise in the Ministry manual, Mathematics for Water and Sewage Operators.

## PREREQUISITES:

- (a) Employment and desirably 6 months experience in the operation of a wastewater treatment plant.
- (b) Desirably Grade XII academic standing.

## PASSING GRADE:

70 per cent

## REGISTRATION FEE:

\$25.00 payable to "Training and Certification Section".

COURSE DESCRIPTIONACTIVATED SLUDGE WORKSHOP

## PURPOSE:

This workshop emphasizes process control and troubleshooting. It is specifically directed at an operator employed as, or likely to be promoted to, shift foreman, operator-in-charge or chief operator of an activated sludge plant.

## SCOPE:

The workshop which includes considerable "hands-on" participation covers the following:

- A. ACTIVATED SLUDGE OPERATING PRINCIPLES
- B. FACTORS AFFECTING THE PROCESS
- C. SAMPLING AND FLOW MEASUREMENT
- D. IDENTIFICATION AND SOLUTION OF OPERATING PROBLEMS
- E. PHOSPHORUS REMOVAL
- F. MICROSCOPIC EXAMINATION
- G. LABORATORY TESTS INCLUDING DO, pH, BOD, PHOSPHOROUS DETERMINATION

PRE-COURSE  
FAMILIARIZATION:

Pre-Course study material will be provided. When preparing to attend this workshop an applicant must:

- (a) Review the Ministry manual, Activated Sludge Process;
- (b) Complete the exercises in the Ministry manual, Mathematics for Water and Sewage Operators;

## PREREQUISITES:

Successful completion of the Ministry of the Environment Basic Sewage Treatment Operation Course; or equivalent.

## PASSING GRADE:

70 per cent

## REGISTRATION FEE:

\$25.00 payable to "Training and Certification Section".

COURSE DESCRIPTIONPRIMARY TREATMENT AND DIGESTION WORKSHOP

## PURPOSE:

The Primary Treatment and Digestion Workshop emphasizes process control and troubleshooting. It is specifically directed at an operator employed as, or likely to be promoted to, shift foreman, operator-in-charge or chief operator of a primary treatment plant.

## SCOPE:

The course covers the following topics:

- A. RAW SEWAGE CHARACTERISTICS
- B. PUMPING STATIONS & STANDBY POWER
- C. PRETREATMENT WORKS
- D. PRIMARY SEDIMENTATION
- E. LABORATORY ANALYSES
- F. ANAEROBIC AND AEROBIC DIGESTIONS - THEORY
  - OPERATION & CONTROLS
  - PROBLEMS
- G. SLUDGE PROCESSING

## PRE-COURSE

## FAMILIARIZATION:

Pre-course study material will be provided. When preparing to attend this workshop, the applicant must

- (a) Review the Primary Treatment and Digestion manual.
- (b) Complete the exercises in the Ministry manual, Mathematics for Water and Sewage Operators.

## PREREQUISITES:

Successful completion of the Ministry Basic Sewage Treatment Operation Course or equivalent.

## PASSING GRADE:

70 per cent

## REGISTRATION FEE:

\$25.00 payable to "Training and Certification Section".

## COURSE DESCRIPTION

BASIC WATER TREATMENT OPERATION COURSE

## PURPOSE:

The Basic Water Treatment Operation Course is designed primarily for operators in training and to increase on-the-job efficiency of water treatment plant operators. The program stresses "the need to know" rather than the "nice to know" of all processes associated with water treatment. This course is a prerequisite to the Surface Water Treatment Workshop.

## SCOPE:

The Course covers the following topics:

- A. WATER BACTERIOLOGY AND SAMPLING
- B. PHYSICAL AND CHEMICAL CHARACTERISTICS
- C. WATER SOURCES
- D. COAGULATION, FLOCCULATION AND SEDIMENTATION
- E. WATER FILTRATION
- F. CHLORINATION
- G. SAFETY
- H. BASIC LABORATORY TESTS
- I. RECORDS
- J. CALCULATIONS For Chemical Dosage

## PRE-COURSE

## FAMILIARIZATION:

Pre-Course study material will be provided. When preparing to attend this course, an applicant must:

- (a) Review the Ministry manual, Basic Water Treatment Operation;
- (b) Complete the exercises in the Ministry manual, Mathematics for Water and Sewage Operators.

## PREREQUISITES:

- (a) Employment and desirably six months experience in the operation of water treatment plants.
- (b) Desirably Grade XII academic standing.

## PASSING GRADE:

70 per cent

## REGISTRATION FEE:

\$25.00 payable to "Training and Certification Section".

COURSE DESCRIPTIONSURFACE WATER TREATMENT WORKSHOP

## PURPOSE:

The Surface Water Treatment Workshop is designed to increase the knowledge of experienced water treatment plant operators. It is specifically directed at an operator employed as, or likely to be promoted to, shift foreman, operator-in-charge or chief operator of a water treatment plant.

## SCOPE:

The workshop which includes considerable "hands-on" participation covers the following topics:

- A. COAGULATION
- B. FILTRATION
- C. WATER TREATMENT CHEMISTRY
- D. TASTE & ODOUR CONTROL
- E. LABORATORY TESTS
- F. MICROBIOLOGICAL CONSIDERATIONS
- G. PROBLEM SOLVING

## PRE-COURSE

## FAMILIARIZATION:

Pre-course study material will be provided. When preparing to attend this workshop an applicant must:

- (a) Review the Ministry manual, Surface Water Treatment;
- (b) Complete the exercises in the Ministry manual, Mathematics for Water and Sewage Operators.

## PREREQUISITES:

Successful completion of the Ministry of the Environment Basic Water Treatment Operation Course; or equivalent.

## PASSING GRADE:

70 per cent

## REGISTRATION FEE:

\$25.00 payable to "Training & Certification Section".

COURSE DESCRIPTIONBASIC GAS CHLORINATION WORKSHOP

## PURPOSE:

The Basic Gas Chlorination Workshop is designed to familiarize the new or inexperienced operator with the operation of various types of gas chlorination equipment, as well as to teach maintenance and troubleshooting procedures.

## SCOPE:

The Workshop which includes considerable "hands-on" participation covers the following topics:

- A. CHLORINATION THEORY
- B. COMPONENTS OF A GAS CHLORINATION INSTALLATION
- C. CONTROL SYSTEMS
- D. STORAGE AND HANDLING OF CHLORINE GAS CYLINDERS
- E. SAFETY PRACTICES
- F. CHLORINATION EQUIPMENT & COMPONENTS
- G. START-UP & SHUT-DOWN PROCEDURES
- H. GENERAL MAINTENANCE
- I. TROUBLESHOOTING
- J. CHLORINATION LABORATORY TESTS

## PRE-COURSE

## FAMILIARIZATION:

Pre-course study material, including the Basic Gas Chlorination manual, will be provided.

## PREREQUISITES:

Employment in a water or wastewater treatment plant or as an operator of chlorination equipment used in industry or recreational facilities.

## PASSING GRADE:

70 per cent

## REGISTRATION FEE:

\$25.00 payable to "Training and Certification Section".



COURSE DESCRIPTIONPUMP OPERATION WORKSHOP

## PURPOSE:

This workshop, developed jointly with the Ontario Municipal Engineers' Association, is designed to increase the knowledge and skills of personnel involved in operating and maintaining all forms of pumping and allied equipment. It is an extension of training for operators of water and wastewater treatment plants.

## SCOPE:

The Workshop which includes considerable "hands-on" participation covers the following:

- A. CHARACTERISTICS OF MATERIALS PUMPED
- B. PUMPING THEORY (HYDRAULICS & ENERGY)
- C. TYPES OF PUMPS
- D. POSITIVE DISPLACEMENT PUMPS
- E. CENTRIFUGAL PUMPS
- F. CONTROLS (PUMP APPLICATION PROCESS REQUIREMENT)
- G. VALVES
- H. MOTORS
- I. SAFETY

PRE-COURSE  
FAMILIARIZATION:

Pre-course study material will be provided. When preparing to attend this workshop an applicant must review the Pump Operation Workshop Manual.

## PREREQUISITES:

The candidate must be employed as an operator or maintenance man in a water or wastewater plant.

## PASSING GRADE:

70 per cent

## REGISTRATION FEE:

\$25.00 payable to "Training and Certification Section".

COURSE DESCRIPTIONPREVENTIVE MAINTENANCE WORKSHOP

## PURPOSE:

The Preventive Maintenance Workshop is designed to increase the knowledge and on-the-job efficiency of an operator who has some responsibility for maintaining water and wastewater plant equipment. It will teach the trainee good practices and demonstrate why a maintenance program is essential to achieve and sustain efficient operations.

## SCOPE:

The Workshop which includes "hands-on" participation covers the following topics:

- A. TOOLS AND WORKSHOP SET-UP
- B. UTILIZATION OF DRAWINGS AND EQUIPMENT MANUALS
- C. MAINTENANCE OF PIPING AND VALVES
- D. LUBRICATION
- E. BEARINGS, SEALS AND PACKING
- F. ALIGNMENT
- G. PUMP TROUBLESHOOTING
- H. MAINTENANCE OF PROCESS EQUIPMENT

## PRE-COURSE

## FAMILIARIZATION:

Pre-course study material, including the Preventive Maintenance Workshop manual, will be provided.

## PREREQUISITES:

The candidate must be employed as an operator in water or wastewater treatment plant operations and/or maintenance.

## PASSING GRADE:

70 per cent

## REGISTRATION FEE:

\$25.00 payable to "Training and Certification Section".

COURSE DESCRIPTIONDIGESTER GAS SYSTEMS MAINTENANCE WORKSHOP

## PURPOSE:

As required by the Energy Act 1971 and related Regulations, the workshop is designed to upgrade the knowledge and skills of personnel who operate and maintain the gas system in a wastewater treatment plant. On successful completion of this workshop, the individual may apply to write the Ministry of Consumer and Commercial Relations (MCCR) examination for certification as a Maintenance Gas Fitter

## SCOPE:

The workshop covers the following topics:

- A. DIGESTION PROCESS AND GAS PRODUCTION
- B. DIGESTER GAS SYSTEM COMPONENTS
- C. GAS PIPING
- D. FUELS AND COMBUSTION
- E. SAFETY

## PRE-COURSE

## FAMILIARIZATION:

When preparing to attend this workshop, an applicant should familiarize himself with digester operations, and review the Energy Act 1971, related Regulations and the Installation Codes for Natural Gas (CGA 149.1-1976), Propane (CGA 149.2-1976) and Oil Burning Equipment (CSA Standard B139-71).

## PREREQUISITES:

The applicant must be employed in the maintenance of the gas system in a wastewater treatment plant. Desirably he should have completed the MOE workshop Primary Treatment and Sludge Digestion and have training in the procedures for safe entry into confined spaces.

## PASSING GRADE:

- (a) 70%
- (b) A passing grade of 75 per cent must be attained on the MCCR test for certification as a Maintenance Gas Fitter.

## REGISTRATION FEE:

\$25.00 payable to "Training and Certification Section", for the workshop  
\$20.00 payable to Treasure Of Ontario if the individual elects to write the MCCR Certification examination.

COURSE DESCRIPTIONINDUSTRIAL ABATEMENT-AIR MANAGEMENT COURSE

## PURPOSE:

The Industrial Abatement-Air Management Course consists of three parts. It is designed to familiarize personnel with the air management aspect of Industrial Abatement, and to increase the efficiency of provincial officers involved with those duties. Each part will be conducted as a five day workshop, if sufficient candidates are available; otherwise, for each part, candidates will be required to study the appropriate manual, attend an intensive two day training session and be examined at a time and place to be notified.

## SCOPE:

## Part I:

- A. INTRODUCTION TO AIR MANAGEMENT: FEDERAL JURISDICTION
- B. EFFECTS OF AIR POLLUTION INCLUDING PHYTOXICOLOGY
- C. FUELS: COMBUSTION: BOILERS: INCINERATION

## Part II:

- A. METEOROLOGICAL ASPECTS AND MEASUREMENT OF AIR POLLUTION
- B. AIR CONTAMINANT DEPOSITS; ODOURS
- C. ENVIRONMENTAL OFFICERS' DUTIES: REPORTS
- D. SEWAGE TREATMENT

## Part III:

- A. INDUSTRIAL PROCESSES
- B. CONCEPTS OF INDUSTRIAL AIR POLLUTION CONTROL
- C. CONTROL EQUIPMENT

## PRE-COURSE

## FAMILIARIZATION:

Study material will be provided. When preparing for any part of this course an applicant must study the training manual.

## PREREQUISITES:

An applicant must be a provincial officer responsible for functions related to the air management aspects of the Ministry of the Environment program.

There is no prerequisite that one part of the course be taken before another, but it is strongly recommended that applicants who are new to this field take Part I first.

## PASSING GRADE:

Those trainees who achieve passing grades (60 per cent) for all three parts of the course will be awarded a certificate.

## REGISTRATION FEE:

For a workshop \$25.00 payable to "Training and Certification Section".

COURSE DESCRIPTIONVISIBLE EMISSIONS IDENTIFICATION CERTIFICATE COURSE

## PURPOSE:

The Visible Emissions Identification Certificate Course is designed to train Ministry personnel and certify them as being proficient in the identification of the opacities of visible emissions. It will also help to prepare the provincial officer for appearance in court as an expert witness. The course is a combination of lecture and demonstration, with practice.

## SCOPE:

The course covers the following topics:

- A. VISIBLE EMISSIONS - THEIR CAUSE AND REGULATION
- B. CLASSIFICATION AND IDENTIFICATION OF SOURCES
- C. PRINCIPLES OF COMBUSTION
- D. METEOROLOGICAL FACTORS IN READING OF VISIBLE EMISSIONS
- E. LEGAL ASPECTS AND COURTROOM APPEARANCES
- F. PRACTICE IN IDENTIFICATION OF OPACITIES OF VISIBLE EMISSIONS

## PRE-COURSE

## FAMILIARIZATION:

When preparing to attend this course the applicant should read in advance the Visible Emissions Identification Manual, which will be sent out with pre-course material.

## PREREQUISITE:

An applicant for certification must be a provincial officer of the Ministry of the Environment.

## PASSING GRADE:

- (i) 70 per cent (theoretical instruction)
- (ii) Identification of the opacity of a set number of consecutive visible emissions within the permitted deviation standards.

## REGISTRATION FEE:

None.

COURSE DESCRIPTIONACOUSTIC TECHNOLOGY CERTIFICATE COURSE

## PURPOSE:

The Acoustic Technology Certificate Course consists of four parts. It is designed to familiarize personnel with the techniques of practical acoustics required to fulfill the obligations of the municipal noise control officer or other noise control and abatement agencies. Upon successful completion of the appropriate parts of the course, the trainee will be qualified to perform noise control duties at the level indicated by the certificate rank awarded, as follows:

<u>CERTIFICATE</u>	<u>COURSE</u>
Class 1	Acoustics I and II
Class 2	Acoustics I, II and III
Class 3	Acoustics I, II, III, IV

The Ontario Association of Certified Engineering Technicians and Technologists (OACETT) has approved the combined Acoustics I and II Courses as a single credit course for OACETT certification purposes. Consideration of Acoustics III and IV as OACETT credit courses is pending.

## SCOPE:

## ACOUSTICS I:

Introductory Acoustic Theory; Law; Handling of Complaints; Use of simple sound level meter, octave band analyser and calibration techniques; Measurement of traffic noise and industrial noise, Procedures; Audiometry, Personal hearing test; Examination.

## ACOUSTICS II:

Review of Acoustics I; Theory; Law: Complaint investigations; National and International Standards; Use of 1/3 octave analyser; Tape recorder; Impulse sound level meter; Introduction to  $L_{eq}$  Field work; Examination.

## ACOUSTICS III:

Review of Acoustics II; Theory; Law; Stop orders, Control orders, Provincial officer's report; Prosecutions; Graphic analyser; Statistical analyser; Sound descriptors, percentiles, cumulative and statistical distribution; Vibration analysis; Stationary source noise analysis; Laboratory; Field work; Examination.

## ACOUSTICS IV:

Review of Acoustics III; Theory; Law; Use of digital monitors; Off-road and road side traffic measurements. Field investigation and reports; Technical Publications; Implementation of a Noise By-Law; Advanced procedures; Selection of instrumentation; Examination.

PRE-COURSE  
FAMILIARIZATION:

Pre-course study material, including manuals, will be provided. When preparing to attend any part of this course, an applicant must complete the pre-course requirements.

PREREQUISITES:

Courses are to be taken in the order designated. Possession of a valid certificate of a lower rank is a pre-requisite for all courses Acoustics II through Acoustics IV inclusive, but recognition will be given for prior formal training in acoustics.

PASSING GRADE:

Those trainees who achieve a passing grade will be awarded a certificate of competency in acoustics technology in the rank achieved, valid for three calendar years only. The passing grade for all courses will be 60 per cent.

REGISTRATION FEE:

The fee for each part of this four part course is:

- |                                       |          |
|---------------------------------------|----------|
| 1. Government and Municipal employees | \$ 25.00 |
| 2. Others                             | \$150.00 |

Payable to "Training and Certification Section".

COURSE DESCRIPTIONACOUSTIC TECHNOLOGY IN LAND USE PLANNING

## PURPOSE:

The course on Acoustic Technology in Land Use Planning discusses the impact of noise on land use. It is designed for the Noise Control Officer, urban planner and architect.

## SCOPE:

The course, which includes a review of Acoustic Technology Certificate Course I through III, covers the following subjects:

- A. COMMUNITY NOISE SURVEYS
- B. LAND USE PLANNING CONCEPTS
- C. PREDICTIONS OF ROAD AND RAIL TRAFFIC NOISE LEVELS
- D. THICK AND THIN BARRIER ATTENUATION
- E. DIGITAL AND STATISTICAL SAMPLING TECHNIQUES
- F. USE OF  $L_{eq}$ ,  $L_{dn}$ , NEF AND OTHER DESCRIPTORS
- G. FIELED PROJECT
- H. ANALYSIS OF DATA
- I. REVIEW OF THE PLANNING ACT, BY-LAW AND PROCEDURES

## PRE-COURSE

## FAMILIARIZATION:

Candidates must review Part 1 of the Acoustic Technology Certificate. Pre-Course study material, including manuals will be provided.

## PREREQUISITES:

Candidates must have successfully completed Acoustic Technology Certificate Course Part 1 or have had suitable previous formal training.

## PASSING CRADL:

Candidates achieving a passing grade of 60 per cent will be awarded a certificate denoting successful completion of the course.

## REGISTRATION FEE:

Payable to "Training and Certification Section"

- |                                       |          |
|---------------------------------------|----------|
| 1. Government and Municipal Employees | \$ 25.00 |
| 2. Others                             | \$150.00 |



COURSE DESCRIPTIONSEWER AND WATERMAIN DESIGN COURSES**PURPOSE:**

This course, developed and conducted jointly with the Ontario Municipal Engineers Association, is intended to broaden the understanding and knowledge of personnel who are engaged in the design of Sewer and Watermain Systems. Topics covered on the first day are common to both course segments. During the subsequent three (3) days, each is held separately. The selection of the segment (sewer design or watermain design) should be clearly identified in the application.

**SCOPE:**SEWER DESIGN

- A. PROJECT PROCEDURE
- B. PHYSICAL LAYOUT OF SEWER & WATERMAIN SYSTEMS
- C. M.O.E. APPROVALS
- D. ENGINEERING AGREEMENTS
- E. CONSTRUCTION PRACTICES
- F. STORM WATER MANAGEMENT PART I
- G. STORM WATER MANAGEMENT PART II
- H. SEWER APPURTENANCES
- I. HOW DESIGN AFFECTS SEWER MAINTENANCE
- J. SEWER MATERIALS
- K. SEWER DESIGN GENERAL
- L. STRUCTURAL PROBLEM SOLVING
- M. CONSTRUCTION IN HYDRAULIC ASPECTS OF SEWER DESIGN
- N. SEWER DESIGN CALCULATIONS

WATERMAIN DESIGN

- A. PROJECT PROCEDURE
- B. PHYSICAL LAYOUT OF SEWER & WATERMAIN SYSTEMS
- C. M.O.E. APPROVALS
- D. ENGINEERING AGREEMENTS
- E. CONSTRUCTION PRACTICES
- F. FRICTION HYDRAULICS
- G. HOW DESIGN AFFECTS MAINTENANCE
- H. CALCULATING DEMANDS
- I. WATERMAIN MATERIALS
- J. WATERMAIN APPURTENANCES
- K. WATERMAIN INSULATION
- L. DESIGN CONSIDERATION WITH OTHER UTILITIES
- M. DESCRIPTION OF LOOP ANALYSIS
- N. VALVE AND METER SIZING
- O. WATERMAIN CORROSION

PRE-COURSE FAMILIARIZATION:

- (a) Review the lecture notes and other material mailed out for pre-course study.
- (b) Answer the pre-course study problems, which will be discussed during the course.

PREREQUISITES:

Candidates for this course should have some basic understanding of sewer and watermain design and should be employed, at least in part, in the design of Sewer and Watermain Systems.

REGISTRATION FEE:

\$235.00 (includes reference materials, meals and accommodation for 4 days). Registration fee must be made payable to MUNICIPAL ENGINEERS ASSOCIATION.

COURSE DESCRIPTIONMEA/MOE INSPECTOR'S COURSE NO. 1

## PURPOSE:

This course, developed and conducted jointly with the Ontario Municipal Engineers Association, is intended to broaden the understanding and knowledge of persons engaged in inspecting Sewer and Watermain construction projects.

## SCOPE:

The course includes presentations on and discussions of the following topics:

- A. TENDERING & CONTRACT PROCEDURES
- B. T.V. INSPECTION & INTERNAL GROUTING OF SEWER PIPE
- C. PIPE MATERIALS
- D. SEWER CONSTRUCTION AND TESTING
- E. WATERMAIN CONSTRUCTION AND TESTING
- F. CONSTRUCTION LAYOUT
- G. SAFETY PRACTICES AND REGULATIONS
- H. ENVIRONMENTAL CONSIDERATIONS
- I. EXCAVATION AND BACKFILL
- J. DEWATERING METHODS
- K. TUNNELLING
- L. BLASTING
- M. RESTORATION
- N. INSPECTORS DUTIES
- O. RECORD KEEPING

## PRE-COURSE

## FAMILIARIZATION:

Pre-course study material will be provided. Personnel attending this course should be familiar with the Regulations in their own area.

## PREREQUISITES:

Those attending the course should be employed in the private or public sector where a significant portion of the job function is inspection of the construction of Sewers and Watermains.

## PASSING GRADE:

60 per cent

## REGISTRATION FEE:

\$25.00 payable to Municipal Engineers Association of Ontario.

COURSE DESCRIPTIONMEA/MOE INSPECTOR'S COURSE NO. 2

## PURPOSE:

This course, developed and conducted jointly with the Ontario Municipal Engineers Association, is intended to broaden the understanding and knowledge of persons engaged in inspecting the construction of Sewage and Water facilities.

## SCOPE:

The course includes presentations on and discussions of the following topics:

- A. BASIC ELEMENTS OF CONSTRUCTION DOCUMENTS
- B. ROLE OF THE INSPECTOR
- C. RECORD KEEPING
- D. BASIC SOILS
- E. WATERMAIN DESIGN
- F. SEWER DESIGN
- G. CONSTRUCTION SAFETY
- H. PLANT LAYOUT
- I. PLANT EQUIPMENT
- J. REINFORCED CONCRETE: THEORY AND PRACTICE
- K. BLASTING
- L. CONCRETE HANDLING

## PRE-COURSE

## FAMILIARIZATION:

Pre-course study material will be provided. Personnel attending this course should be familiar with the regulations in their own area.

## PREREQUISITES:

Those attending the course should be employed in the private or public sector where a significant portion of the job function is inspection of the construction of Sewage and Water facilities.

## PASSING GRADE:

60 per cent.

## REGISTRATION FEE:

\$30.00 payable to Municipal Engineers Association of Ontario.

COURSE DESCRIPTIONOPERATION AND MAINTENANCE OF WATER DISTRIBUTION SYSTEMS

## PURPOSE:

The course Operation and Maintenance of Water Distribution Systems is designed for new staff and to increase on-the-job efficiency of others. On completion of this course and the associated MOE workshops on pump operations and equipment maintenance, the individual will be capable of operating and maintaining water distribution systems, correcting malfunctions of equipment and performing quality control tests.

## SCOPE:

The following topics will be dealt with:

- A. WATER SOURCES AND TREATMENT
- B. FACTORS IN PLANNING AND DESIGN
- C. WATER QUALITY OBJECTIVES
- D. WATERMAIN PIPES, JOINTS
- E. APPURTENANCES
- F. HYDRAULICS
- G. LEAK DETECTION, REPAIR, THAWING, RESTORATION
- H. CLEANING, FLUSHING, DISINFECTION, CROSS CONNECTIONS
- I. REPORTS AND RECORDS, PUBLIC RELATIONS
- J. SAFETY
- K. CORROSION

## PRE-COURSE

## FAMILIARIZATION:

The applicant must review pre-course study material including the Ministry manual Operation and Maintenance of Water Distribution Systems.

## PREREQUISITES:

- (a) Employed in operating and/or maintaining a water distribution system.
- (b) Desirable Grade XII academic standing.

## PASSING GRADE:

70 per cent

## REGISTRATION FEE:

\$25.00 payable to "Training and Certification Section".

COURSE DESCRIPTIONOPERATION AND MAINTENANCE OF WASTEWATER COLLECTION SYSTEMS

## PURPOSE:

The workshop Operation and Maintenance of Wastewater Collection Systems is designed for new staff and to increase on-the-job efficiency of others. On completion of this course and the associated MOE courses on pump operations and equipment maintenance the individual will understand the operation of a collection system and be capable of operating and maintaining the system and correcting malfunctions of equipment.

## SCOPE:

The following topics will be dealt with:

- A. WASTEWATER CHARACTERISTICS
- B. COMBINED/SANITARY SEWERS, APPURTENANCES
- C. LIFT STATIONS
- D. STANDBY EQUIPMENT
- E. FLOW MEASUREMENT AND CONTROL
- F. INSPECTION AND TESTING
- G. CLEANING, MAINTENANCE AND REPAIR
- H. RECORDS
- I. SAFETY

## PRE-COURSE

## FAMILIARIZATION:

An applicant must review the Ministry manual Operation and Maintenance of Wastewater Collection Systems

## PREREQUISITES:

- (a) Employed in the operation and/or maintenance of a wastewater collection system.
- (b) Desirable Grade XII academic standing.

## PASSING GRADE:

70 per cent

## REGISTRATION FEE:

\$25.00 payable to "Training and Certification Section".

## TRAINING AND CERTIFICATION SECTION CALENDAR 1979/80

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PROGRAM SCHEDULE 1979/80

PROGRAM	(Capacity)	Dates	Location	Applications By	Remarks
MONITORING WATER/WASTEWATER OPERATIONS	(25)	Jan. 7 - 11 80	OEF BRAMPTON	November 15	MOE Only
BASIC SEWAGE TREATMENT	(25)	Sep. 10 - 14 79	OEF BRAMPTON	July 15	Operators Only
		Dec. 10 - 14 79	OEF BRAMPTON	October 15	
		Apr. 28 - Mar.2 80	OEF BRAMPTON	February 15	Operators Only
ACTIVATED SLUDGE PROCESS	(25)	Nov. 5 - 9 79	OEF BRAMPTON	September 15	Operators Only
		Feb. 4 - 8 80	OEF BRAMPTON	December 15	Operators Only
		Mar. 10 - 14 80	OEF BRAMPTON	January 15	Operators Only
		May 26 - 30 80	OEF BRAMPTON	March 15	
PRIMARY TREATMENT & SLUDGE DIGESTION	(25)	Dec. 3 - 7 79	OEF BRAMPTON	October 15	Operators Only
		Mar. 17 - 21 80	OEF BRAMPTON	January 15	
BASIC WATER TREATMENT	(25)	Sep. 17 - 21 79	OEF BRAMPTON	July 15	Operators Only
		Jan. 28 - Feb.1 80	OEF BRAMPTON	November 15	
		Apr. 21 - 25 80	OEF BRAMPTON	February 15	Operators Only
SURFACE WATER TREATMENT	(25)	Nov. 26 - 30 79	OEF BRAMPTON	September 15	Operators Only



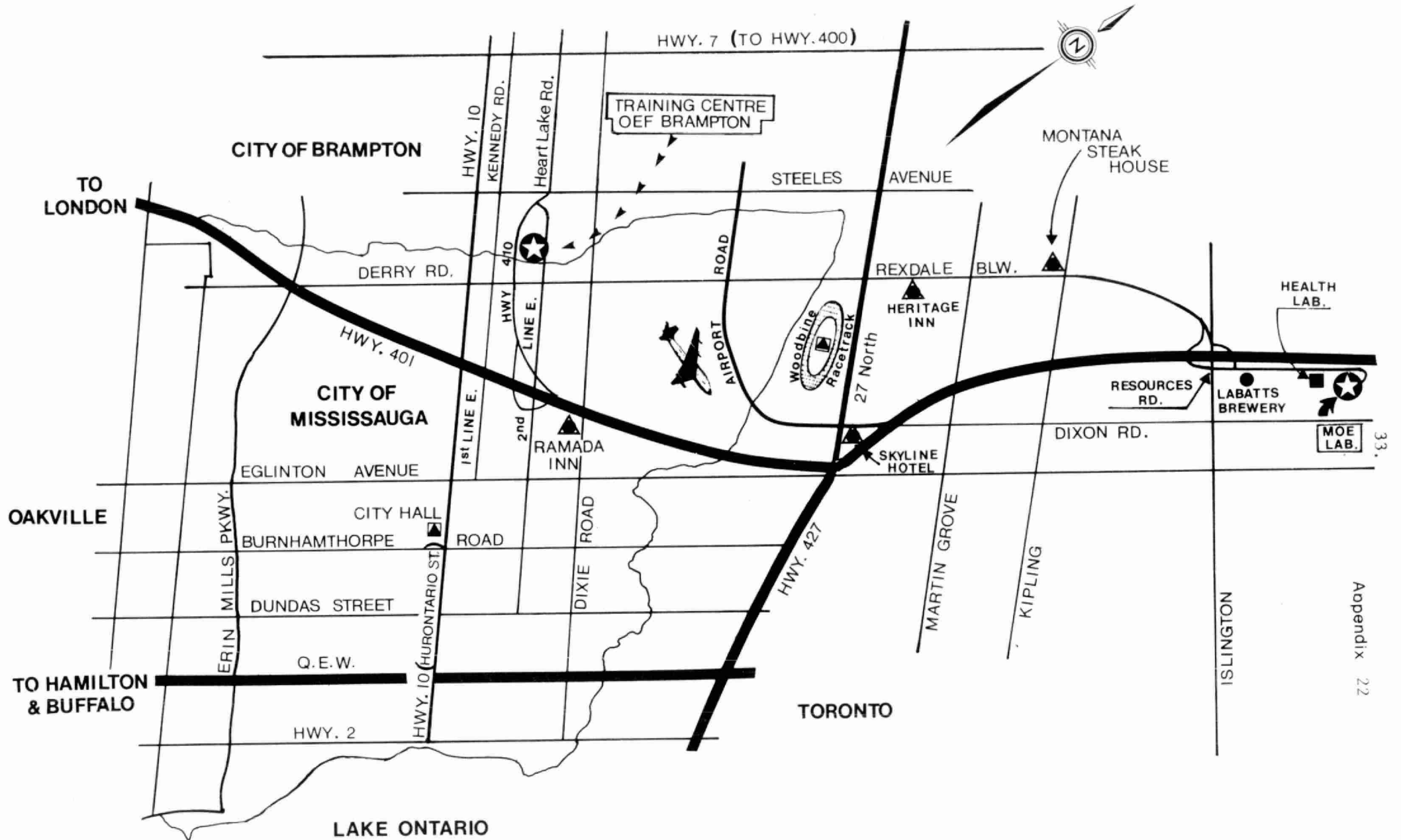
PROGRAM SCHEDULE 1979/80

PROGRAM	(Capacity)	Dates			Location		Applications By		Remarks
SURFACE WATER TREATMENT	(25)	Mar.	3 - 7	80	OEF	BRAMPTON	January	15	
BASIC GAS CHLORINATION	(25)	Oct.	1 - 5	79	OEF	BRAMPTON	August	15	Operators Only
		Nov.	19 - 23	79	OTTAWA, ONT.		September	15	Operators Only
		Jan.	14 - 18	80	OEF	BRAMPTON	November	15	Operators Only
		Feb.	25 - 29	80	OEF	BRAMPTON	December	15	Operators Only
		May	12 - 16	80	OEF	BRAMPTON	March	15	Operators Only
PUMP OPS. WORKSHOP	(25)	Oct.	29 - Nov.2	79	OEF	BRAMPTON	August	15	Operators Only
		Jan.	21 - 25	80	OEF	BRAMPTON	November	15	Operators Only
		Apr.	14 - 18	80	OEF	BRAMPTON	February	15	Operators Only
PREVENTIVE MAINTENANCE	(25)	Oct.	22 - 26	79	OEF	BRAMPTON	August	15	Operators Only
		Feb.	18 - 22	80	OEF	BRAMPTON	December	15	Operators Only
		May	5 - 9	80	OEF	BRAMPTON	March	15	Operators Only
DIGESTER GAS SYSTEMS	(25)	Sep.	24 - 28	79	OEF	BRAMPTON	July	15	Operators Only
		Feb.	11 - 15	80	OEF	BRAMPTON	December	15	Operators Only

PROGRAM SCHEDULE 1979/80

PROGRAM	(Capacity)	Dates	Location	Applications By	Remarks
INDUSTRIAL AIR ABATEMENT I	(30)	Nov. 5 - 9 79	MOE LABORATORY	September 15	MOE Only
INDUSTRIAL AIR ABATEMENT II	(30)	Jan. 28 - Feb. 1 80	MOE LABORATORY	November 15	MOE Only
INDUSTRIAL AIR ABATEMENT III	(30)	May 12 - 16 80	MOE LABORATORY	March 15	MOE Only
VISIBLE EMISSIONS		May - June 80	VARIOUS		MOE Only
ACOUSTICS TECHNOLOGY I	(25)	Oct. 1 - 5 79	MOE LABORATORY	August 15	
ACOUSTICS TECHNOLOGY II	(25)	Feb. 25 - 29 80	MOE LABORATORY	December 15	
ACOUSTICS TECHNOLOGY III	(25)	Apr. 14 - 18 80	MOE LABORATORY	February 15	
ACOUSTICS TECHNOLOGY IV	(25)	May 26 - 30 80	MOE LABORATORY	March 15	
ACOUSTICS TECHNOLOGY IN LAND USE PLANNING	(25)	Oct. 29 - Nov. 2 79	MOE LABORATORY	August 15	
		May 5 - 9 80	MOE LABORATORY	March 15	
SEWER & WATERMAIN DESIGN	(40)	Nov. 13 - 16 79	STAFF TRAINING CENTRE - BARRIE	September 15	
SEWER & WATERMAIN CONSTRUCTION INSPECTORS' NO. 1	(40)	Dec. 10 - 14 79	MOE LABORATORY	October 15	
SEWER & WATERMAIN CONSTRUCTION INSPECTORS' NO. 2	(40)	Mar. 17 - 21 80	MOE LABORATORY	January 15	

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ACCOMODATION

<u>Hotel</u>	<u>Single Rate</u>	<u>Double Rate</u>
Cambridge Motor Hotel Dixon Rd. & Highway 401 Tel: 249-7671	\$22.00 26.00	\$27.00 31.00
Heritage Inn 385 Rexdale Blvd. Tel: 742-5510	\$23.00	\$29.00
Howard Johnson's Airport Hotel 801 Dixon Road Tel: 675-6100	\$29.50	\$34.00
Skyline Hotel 655 Dixon Road Tel: 244-1711	\$35.00	\$41.00
Ramada Inn 544 Dixie Rd. Mississauga, Ontario Tel: 624-1144	\$30.00	\$37.00
Constellation Hotel 900 Dixon Road Tel: 677-1500	\$32.00	\$32.00

The above rates were provided by the management of each hotel and are subject to change with time.

The guest room rates should be confirmed at the time reservations are being made.

A road map showing the location of the MOE Laboratories and other training facilities, and access to the various local hotels is at Appendix 22.

